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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,589	02/08/2002	Christopher Frederick Carter	THOR/0011	2703
7590 12/17/2003			EXAMINER	
WILLIAM B. PATTERSON MOSER, PATTERSON & SHERIDAN, L.L.P. Suite 1500 3040 Post Oak Blvd. Houston, TX 77056			GABOR, OTILIA	
			ART UNIT	PAPER NUMBER
			2878	
DATE MAILED: 12/17/2003				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/071,589

Applicant(s)

CARTER, CHRISTOPHER  
FREDERICK

Examiner

Otilia Gabor

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Response to Amendment***

1. The amendments filed 09/22/2003 have been entered.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-7, 9, 11-15 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Porter (U. S. Patent 6239433).

Porter discloses an apparatus and method for generating an image of the infrared radiation emitted from a particular viewing region, in order to detect the presence of a flame or fire in that region and to actuate an alarm system when the characteristics of the fire or flame (size, location) are not consistent with the predetermined conditions, the system comprising:

- a sensor array 1 with elements  $E_i$  where  $i$  represents the number of elements in the array, for capturing the infrared radiation with a predetermined wavelength,  $4.3 \mu\text{m}$ , emanating from a viewing region 12 and for outputting a signal indicative of the intensity of the radiation coming from the flame in this first wavelength range

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- a second infrared sensor with an absorption band in the 5.5  $\mu\text{m}$  range for measuring the radiation emanating from the flame in this second wavelength range (see Col.6, lines 46-50) and outputting a signal indicative of the intensity of the radiation in this second wavelength range
- a microprocessor 20 for comparing the two intensities from the outputs of the sensors and analyze whether the compared value (ratio) is indicative of the presence of a flame. See Col.6, lines 25-53 and Fig.7.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-11, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Porter and further in view of Nakauchi et al. (U. S. Patent 4179606).

Porter discloses an apparatus and method for generating an image of the infrared radiation emitted from a particular viewing region, in order to detect the presence of a flame or fire in that region and to actuate an alarm system when the characteristics of the fire or flame (size, location) are not consistent with the predetermined conditions, the system comprising the elements as disclosed in detail in the above paragraph. Porter discloses the measuring of the intensities from the object (flame) in the viewing area and the process of comparing these two intensities to prove

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the presence of the flame. Though, it is inherent that comparison of values means taking a ratio of the values in order to avoid any misunderstanding, the second reference Nakauchi et al. is used to provide this conventional method of comparing two intensity values obtained in a flame detector. Nakauchi discloses a flame sensor 7 whereby instead of using two separate detectors (which is the conventional method) he uses two separate filters 2, 3 with the same detector 7 to detect the intensities of the radiation emanating from a flame at two different wavelengths and comparing the two intensities obtained by taking their ratio. The value of the ratio thus obtained is compared to a predetermined threshold value and according to this comparison the characteristics of the flame is obtained since the ratio value is indicative of characteristics such as perfect or imperfect flame combustion. See Col.3, lines 1-49 and Fig.2.

Regarding claims 8, 10, 11 Porter fails to use a second detector array responsive in the first wavelength range and a second sensor responsive in the second wavelength range, however using double amount of sensors would have been obvious to one having ordinary skill in the art at the time the invention was made since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Co. v. Bemis Co.*, 193 USPQ 8 (7<sup>th</sup> Cir. 1979).

6. Claims 16, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Porter and further in view of Ganeshan (U. S. Patent 6278374).

Porter fails to disclose that the image analysis includes discerning a number of

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separate radiation sources in the viewing area, however one of ordinary skill in the art would have been motivated to include the processing system of Ganeshan in the flame detecting system of Porter since it increases the number of sources that can be monitored and analyzed within the same viewing region at once and thus it increases the efficiency of the detection. Ganeshan uses a flame imaging system where a number of flame sources are imaged at once and where the processing involves monitoring all the sources in the same viewing region as different image frames and where the intensity of each flame in each frame is calculated and compared to a threshold value in order to determine the presence and some other characteristic of the flames. The intensity of the radiation is taken in the infrared and/or visible wavelength range. See Figs. 1, 6 and Cols. 4-6.

7. Claims 12 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Porter and further in view of Castleman (U. S. Patent 6518574).

Porter fails to use a temperature sensor in the system, however one of ordinary skill in the art would have been motivated to include a temperature sensor in the flame sensor system of Porter since as shown by Castleman it is advantageous to include a temperature sensor 52 in the flame detection system 32 in order to indicate ambient temperature values for calibration purposes to increase the accuracy of the flame detection. See Col.14, lines 55-63.

***Response to Arguments***

8. Applicant's arguments filed 09/22/2003 have been fully considered but they are not persuasive. The main argument presented by the Applicant is that the reference Porter as used to reject the claims does not disclose the invention because it does not disclose measuring the intensity of radiation having a first and a second wavelength within the monitored region and then compare the ratio between the two intensities to a threshold value indicative of a flame. However, though Porter does disclose a method of comparing the radiation intensities within the sensor array elements E of the detector array 1, he also discloses comparing the intensity of radiation in the first wavelength (4.3 micrometer) measured using detector array 1 to the intensity of radiation in the second wavelength (5.5 micrometers) range measured using a second detector. Thus, not only does he include a calculation based on individual sensor elements, but also a calculation as claimed. Thus, the rejection still stands as shown in detail above.

***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Otilia Gabor whose telephone number is 703-305-0384. The examiner can normally be reached on Monday-Friday between 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 703-308-4852. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

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**DAVID PORTA**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**